

# Cosmic particle physics

→ in 10 years (1988—1998)

emulsions... → SuperK...

Cygnus X3... → 1987A, neutrino mass (also p-decay)

→ following 10 years

EGRET → Fermi

Milagro → HAWC

$10^3 \text{ km}^2$  air shower arrays

arrays of TeV gamma ray ACTs

$\text{km}^3$  neutrino detectors

km-scale gravity wave interferometers

→ like 1960's particle physics!

success

instrumentation  
data handling

...

we are not good at capitalism

SSC → LHC

IMB → SuperK

Whipple → CTA

Auger → Auger-Next (not North)



quantized space: matter where the geometry is activated

